

**Regional Sugarcane Research Station
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No. RSRS/Ento./H-1/AICRP/ /2012 Date : 18 - 06 – 2012

To,
Dr. G. G. Radadia
Principal Investigator
AICRP on sugarcane,
Professor of Entomology
N.M. College of Agriculture
N.A, U., Navsari-396 450

Sub: Annual Report of AICRP on Sugarcane Entomology for the year 2011-2012

**Ref: Project Coordinator letter No. F.No. 17-33/2012-PCS Lucknow dated
07-05-2012**

Respected Sir,

With reference to the above cited subject, I am submitting herewith an annual report and it's E-mail of All India Co-ordinated Research Project on Sugarcane, sub centre Navsari, Entomology discipline for the year 2011-2012 and oblige.

Thanking you.

Yours sincerely

Encl: As above

(D.U. Patel)
Research Scientist (S'cane)

Copy FWCS to :

Project Co-ordinator (Sugarcane), All India Co-ordinated Research Project on sugarcane, Indian Institute of Sugarcane Research, P.O. Dilkhusa, LUCKNOW-226 002 U.P. for information please.

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ANNUAL REPORT
ALL INDIA CO-ORDINATED RESEARCH
PROJECT (AICRP)
ON
SUGARCANE (ENTOMOLOGY)
2011-2012



REGIONAL SUGARCANE RESEARCH
STATION
NAVARI AGRICULTURAL UNIVERSITY,
NAVARI – 396 450

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Project no. E.4.1:

1. **Title** : Evaluation of zonal varieties/ genotypes for their reaction against major insect pests
2. **Objective** : To grade the entries in the Zonal Varietal Trials for their behavior towards damage by key pests in the area.
3. **Year of start** : 2011-12
4. **Location** : Regional Sugarcane Research Station, Navsari.
5. **No. of replication s** : Three
6. **Plot size** : 6.00 X1.00 M
7. **Date of planting** : 12-02-2011
8. **Varieties** : IVT/AVT
9. **Signature of the scientist in charge of the experiment :**
10. **Name and designation** : Dr. Mahesh. B. Patel
Associate Research Scientist (Ento.)

Methodology:

The IVT/ AVT/ other sugarcane genotypes were planted separately at Regional Sugarcane Research Station, Navsari. The experimental plot was kept unsprayed through out the period of observation for insect pest attacking on sugarcane crop. Observations were also recorded in the experimental as well as breeder varieties trial as per details given below for following pests.

Early shoot borer, *Chilo infuscatellus* (S.)

- (i) Per cent incidence (based on dead hearts)
- (ii) Number of bored plants.

Observations were recorded at,

- (a) Post germination phase.

(b) Twice subsequently at 30 days interval (i.e. 30, 60 & 90 days after planting). The data were worked out on per cent basis and were statistically analyzed.

Top borer: - *Scirpophaga excerptalis* (Wlk): Per cent incidence during the 5th month, 7th month and at harvest (i.e. 12th months.). The data were worked out on per cent basis and were statistically analyzed.

Root borer: - *Emmalocera depressella* (Swinhoe.): At harvest ten millable canes were dug out and split opened from the different varieties separately in each replication and damage by root

borer larvae in each cane was noted. The data were worked out on per cent basis and were statistically analyzed.

Internode borer: - *Chilo sacchariphagous indicus* (Kapur) Ten canes per replication were taken for the observation at harvest, per cent incidence was noted. The data were statistically analyzed.

Mealy bugs:- *Saccharicoccus sacchari* (Cockerell) and **scale insects,** *Melanaspis glomerata* (Green): Ten canes per replication were taken for observation at harvest for both the pests. Per cent incidence and intensity were recorded for scale insect, while for the mealy bugs per cent incidence and population per internode in each cane were noted. The data were statistically analyzed.

Pyrilla:- *Pyrilla perpusilla* (Wlk.) and *Epiricania melanoleuca*. When infestation starts ten canes were selected in each variety. Three leaves were observed from top, middle and bottom portion of plant in each variety. The population of egg mass, nymph and adult of pyrilla as well as population of egg mass and cocoon of *Epiricania melanoleuca* were recorded. The data were worked out on number basis and were statistically analyzed.

Whitefly:- *Aleurolobus barodensis* (M) When infestation starts one plant was randomly selected in each replication. Three leaves were observed in top, middle and lower canopy. The population of nymph and puparia were recorded as number per 10 sq cm leaf area at six places at random per leaf as replication. The data were worked out on per cent basis and were statistically analyzed.

Project E.4.1.1 AVT- II P (Early) trial

Table- 1: Screening of sugarcane varieties against ESB in AVT II P (Early) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent ESB incidence	Total	Grade
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		30 DAP	60 DAP	90 DAP		
1	Co 06001	(0.00)	11.62(4.07)	11.73(4.14)	11.68(8.21)	LS
2	Co 06002	(0.00)	10.37(3.27)	10.84(3.55)	10.61(6.82)	LS
3	Co 06022	(0.00)	12.95(5.03)	10.61(3.41)	11.78(8.44)	LS
4	CoM 06082	(0.00)	13.24(5.26)	8.10(2.02)	10.67(7.28)	LS
5	PI 06132	(0.00)	9.35(2.67)	11.34(3.87)	10.34(6.54)	LS
6	Co 85004	(0.00)	8.57(2.27)	10.13(3.11)	9.35(5.38)	LS
7	Co 94008	(0.00)	13.38(5.37)	7.29(1.62)	10.34(6.99)	LS
8	CoC 671	(0.00)	10.51(3.34)	13.61(5.54)	12.06(8.88)	LS
S.Em. ±(T)			0.53	0.34	1.69	
S.Em. ±(TxY)			-	-	0.44	
C.D @ 5%(T)			1.62	1.03	NS	
C.D @ 5 % (TxY)			-	-	1.29	
C.V. %			8.22	5.67	7.16	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Early shoot borer, *Chilo infuscatellus* (S.): Five varieties of AVT- II P (Early) along with three checks were screened. The ESB infestation at 60 DAP and 90 DAP was found significant while, in pooled analysis it was found non significant. Based on the cumulative total infestation the minimum infestation was found in Co 85004 (5.38%), while the maximum infestation was found in CoC 671 (8.88%) (Table-1). All genotypes were categorized in LS grade.

Table- 2: Screening of sugarcane varieties against top borer in AVT II P (Early) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent top borer incidence			Total	Grade
		5 th month	7 th month	At harvest		

1	Co 06001	7.71(1.80)	8.33(2.13)	8.47(2.18)	8.17(6.11)	LS
2	Co 06002	8.12(2.00)	8.44(2.17)	5.66(0.98)	7.41(5.15)	LS
3	Co 06022	10.25(3.18)	8.27(2.09)	5.80(1.02)	8.11(6.29)	LS
4	CoM 06082	9.40(2.67)	5.70(0.99)	7.78(1.84)	7.63(5.5)	LS
5	PI 06132	8.13(2.00)	5.89(1.06)	5.69(0.99)	6.57(4.05)	LS
6	Co 85004	9.35(2.73)	5.76(1.01)	5.82(1.03)	6.98(4.77)	LS
7	Co 94008	6.15(1.15)	8.98(2.44)	8.77(2.33)	7.97(5.92)	LS
8	CoC 671	10.99(3.65)	9.99(3.02)	6.24(1.19)	9.08(6.11)	LS
S.Em. \pm(T)		0.46	0.36	0.17	0.92	
S.Em. \pm(TxY)		-	-	-	0.35	
C.D @ 5%(T)		1.40	1.10	0.54	NS	
C.D @ 5 % (TxY)		-	-	-	1.07	
C.V. %		9.15	8.22	4.58	7.95	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Top borer, *Scirpophaga excerptalis* (Wlk): Five varieties of AVT- II P (Early) along with three checks were screened. The top borer, *Scirpophaga excerptalis* (Wlk) infestation at 5th, 7th month and at harvest were found significant while, in pooled analysis it was found non significant. Based on the cumulative total the minimum infestation was found in PI 06132 (4.05%), while it was maximum in Co 06022 (6.29%) (Table-2).

Table- 3: Screening of different varieties against sugarcane pests Internode borer and Root borer in AVT II Plant (Early) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Internode borer			Root borer	
		% incidence	% intensity	Grade	% incidence	Grade
1	Co 06001	18.44 (10.00)	7.60 (1.82)	LS	19.78 (16.67)	MS

2	Co 06002	21.15 (13.33)	6.26 (1.22)	LS	19.78 (16.67)	MS
3	Co 06022	35.22 (33.33)	18.00 (9.55)	MS	16.45 (11.67)	LS
4	CoM 06082	28.78 (23.33)	14.03 (5.90)	MS	22.70 (21.67)	MS
5	PI 06132	39.23 (40.00)	12.97 (5.04)	MS	16.45 (11.67)	LS
6	Co 85004	18.44 (10.00)	5.65 (0.97)	LS	19.78 (16.67)	MS
7	Co 94008	26.07 (20.00)	9.75 (2.87)	LS	19.78 (16.67)	MS
8	CoC 671	18.44 (10.00)	7.60 (0.96)	LS	16.45 (11.67)	LS
S.Em. \pm(T)		2.16	0.49		1.30	
C.D @ 5%(T)		6.57	1.50		3.94	
C.V. %		14.59	8.55		11.92	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Internode borer, *Chilo sacchariphagous indicus* (Kapur):

Five varieties of AVT- II P (Early) were screened along with three checks. The per cent incidence and per cent intensity were found significant. The minimum per cent incidence and per cent intensity were found in test clone Co 06001 (10.00 % and 1.82 %), while maximum per cent incidence was found in PI 06132 (40.00%) and per cent intensity was found in Co 06022 (9.55 %) (Table -3).

Root Borer, *Emmalocera depresella* (Swinhoe): Five varieties of AVT- II P (Early) with three checks were screened. The per cent incidence was found significant. The minimum per cent incidence was found in Co 06022 (11.67%), while maximum per cent incidence was found in CoM 06082 (21.67%) (Table-3).

Table- 4: Screening of different varieties against sugarcane pests Scale insect and Mealy bugs in AVT II Plant (Early) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Varieties	Mean percent scale insect			Mealy Bugs		
		% incidence	Intensity	Grade	% incidence	Population per internode	Grade
1	Co 06001	(0.00)	(0.31)	LS	10.59(5)	1.50(0.09)	LS

2	Co 06002	(15.00)	(11.99)	MS	0.41(0)	0.41(0.00)	LS
3	Co 06022	(10.00)	(11.80)	LS	36.24(35)	5.92(1.07)	HS
4	CoM 06082	(5.00)	(5.90)	LS	39.15(40)	9.51(2.73)	HS
5	PI 06132	(15.00)	(9.06)	MS	45.00(50)	8.03(1.96)	HS
6	Co 85004	(0.00)	(0.00)	LS	45.00(50)	10.66(3.42)	HS
7	Co 94008	(0.00)	(0.00)	LS	42.12(45)	8.29(2.09)	HS
8	CoC 671	(0.00)	(0.00)	LS	33.00(30)	10.12(3.09)	MS
S.Em. ±(T)					2.39	0.22	
C.D @ 5%(T)					7.25	0.66	
C.V. %					13.16	5.53	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Scale insect (*Melanaspis glomerata* (Green)): Five varieties of AVT- II P (Early) along with three checks were screened. The minimum per cent incidence and per cent intensity were recorded in Co 06001 (0.00%), while maximum incidence and per cent intensity were found in Co 06002 (15.00% and 11.99%), respectively (Table -4).

Mealy bugs *Saccharicoccus sacchari* (Cockerell): Five varieties of AVT- II P (Early) along with three checks were screened. The per cent incidence and population per internode were found significant. The minimum per cent incidence and minimum population per internode were recorded in Co 06002 (0.00%) followed by Co 06002 (5.00% and 0.09%), respectively while maximum incidence and population per internode were found in Co 85004 (50.00% and 3.42), respectively (Table -4).

Incidence of whitefly and pyrilla was not found under natural condition.

Project E.4.1.2 IVT (Early) trial:

Table- 1: Screening of sugarcane varieties against ESB in IVT (Early) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent ESB incidence			Total	Grade
		30 DAP	60 DAP	90 DAP		
1	Co 08001	(0.00)	9.82(2.92)	8.55(2.26)	9.18 (5.18)	LS

2	Co 08006	(0.00)	4.05(0.71)	10.92(3.63)	7.48 (4.34)	LS
3	CoN 08071	(0.00)	6.66(1.35)	10.68(3.45)	8.67 (4.8)	LS
4	PI 08131	(0.00)	9.01(2.46)	11.39(3.91)	10.20 (6.37)	LS
5	VSI 08121	(0.00)	3.91(0.67)	11.28(3.88)	7.59 (4.55)	LS
6	Co 85004	(0.00)	9.99(3.02)	10.13(3.11)	10.06 (6.13)	LS
7	Co 94008	(0.00)	13.38(5.37)	7.29(1.62)	10.34 (6.99)	LS
8	CoC 671	(0.00)	10.51(3.34)	13.61(5.54)	12.06 (8.88)	LS
S.Em. \pm(T)			0.87	0.59	2.21	
S.Em. \pm(TxY)			-	-	0.75	
C.D @ 5%(T)			2.66	1.80	N.S	
C.D @ 5 % (TxY)			-	-	2.17	
C.V. %			18.09	9.83	13.76	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Early shoot borer, *Chilo infuscatellus* (S.):

Five varieties along with three checks were screened in IVT (Early) for early shoot borer. The ESB infestation at 60 DAP and 90 DAP was observed significant. However, in pooled analysis it was found non significant. There was no infestation of ESB in any entry at 30 DAP. Based on the cumulative total the minimum infestation was found in Co 08006 (4.34%) followed by CoVSI 08121(4.55%), while the maximum infestation was found in CoC 671(8.88%) (Table-1).

Table- 2: Screening of sugarcane varieties against top borer in IVT (Early) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent top borer incidence			Total	Grade
		5 th month	7 th month	At harvest		
1	Co 8001	10.76 (3.49)	9.73 (2.86)	7.07 (1.54)	9.19 (7.89)	LS
2	Co 8006	11.62 (4.07)	8.63 (2.26)	7.44 (1.69)	9.23 (8.02)	LS
3	CoN 08071	5.75 (1.01)	9.52 (2.74)	9.87 (2.94)	8.38 (6.69)	LS

4	PI 08131	9.13 (2.58)	7.64 (1.77)	5.64 (0.96)	7.46 (5.31)	LS
5	VSI 08121	6.16 (1.16)	9.97 (3.01)	6.99 (1.52)	7.71 (5.69)	LS
6	Co 85004	9.28 (2.61)	4.74 (1.01)	5.82 (1.03)	6.61 (4.65)	LS
7	Co 94008	6.15 (1.15)	8.98 (2.44)	8.77 (2.33)	7.97 (5.92)	LS
8	CoC 671	10.83 (3.59)	9.99 (3.02)	6.24 (1.19)	9.02 (7.8)	LS
S.Em. ±(T)		0.53	0.90	0.40	1.17	
S.Em. ±(TxY)		-	-	-	0.64	
C.D @ 5%(T)		1.62	2.73	1.22	NS	
C.D @ 5 % (TxY)		-	-	-	1.96	
C.V. %		10.61	18.06	9.62	13.69	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Top borer, *Scirpophaga excerptalis* (Wlk): Five varieties along with three checks were screened in IVT (Early). The top borer, *Scirpophaga excerptalis* (Wlk) infestation at 5th month, 7th month and at harvest was found significant. However, in pooled analysis it was found non significant. Based on the cumulative total the minimum infestation was found in Co 85004 (4.65%) followed by PI 08131 (5.31%), while the maximum infestation was found in Co 08006 (8.02%) (Table-2).

Table- 3: Screening of different varieties against sugarcane pests Internode borer and Root borer in IVT (Early) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Internode borer			Root borer	
		% incidence	% intensity	Grade	% incidence	Grade
1	Co 08001	0.40(0.00)	0.41 (0.00)	LS	16.45 (11.67)	LS
2	Co 08006	18.44(10.00)	6.42 (1.25)	LS	18.52 (15.00)	LS
3	CoN 08071	18.44(10.00)	5.96 (1.08)	LS	19.78 (16.67)	MS
4	PI 08131	21.15(13.33)	7.40 (1.68)	LS	12.37 (6.67)	LS
5	VSI 08121	18.44(10.00)	5.61 (0.96)	LS	19.78 (16.67)	MS

6	Co 85004	18.44(10.00)	5.65 (0.97)	LS	19.78 (16.67)	MS
7	Co 94008	26.57 (20.00)	9.75 (2.87)	LS	19.78 (16.67)	MS
8	CoC 671	18.44 (10.00)	5.63 (0.96)	LS	16.45 (11.67)	LS
S.Em. ±(T)		0.96	0.19		1.33	
C.D @ 5%(T)		2.91	0.57		4.04	
C.V. %		9.46	5.57		12.93	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Internode borer, *Chilo sacchariphagous indicus* (Kapur): Five varieties along with three checks were screened in IVT (Early). The internode borer per cent incidence and per cent intensity were found significant. The minimum per cent incidence and per cent intensity were found in Co 08001 (0.00%), while maximum per cent incidence and per cent intensity were found in Co 94008 (20.00% and 2.87 %), respectively (Table -3).

Root Borer, *Emmalocera depressella* (Swinhoe): Five varieties along with three checks were screened. The per cent incidence was found significant. The minimum per cent incidence was found in PI 08131 (6.67 %), while maximum per cent incidence was found in Co VSI 08121 (16.67 %) (Table-3).

Table- 4: Screening of different varieties against sugarcane pests Scale insect and Mealy bugs in IVT (Early) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Varieties	Mean percent scale insect			Mealy Bugs		
		% incidence	Intensity	Grade	% incidence	Population per internode	Grade
1	Co 08001	(0.00)	(0.00)	LS	26.57(20)	4.91(0.73)	MS
2	Co 08006	(0.00)	(0.00)	LS	45.00(50)	12.58(4.76)	HS
3	CoN 08071	(0.00)	(0.00)	LS	45.00(50)	15.51(7.16)	HS

4	PI 08131	(0.00)	(0.00)	LS	45.00(50)	10.93(3.60)	HS
5	VSI 08121	(0.00)	(0.00)	LS	42.12(45)	10.21(3.16)	HS
6	Co 85004	(0.00)	(0.00)	LS	45.00(50)	10.66(3.42)	HS
7	Co 94008	(0.00)	(0.00)	LS	42.12(45)	8.29(2.09)	HS
8	CoC 671	(0.00)	(0.00)	LS	33.00(30)	10.12(3.09)	MS
S.Em. ±(T)					1.64	0.37	
C.D @ 5%(T)					4.99	1.12	
C.V. %					7.03	6.08	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Scale insect (*Melanaspis glomerata* (Green))

Five varieties along with three checks were screened. The incidence of scale insects was not found (Table-4).

Mealy bugs, *Saccharicoccus sacchari* (Cockerell)

Five varieties along with three checks were screened. The per cent incidence and population per internode were found significant. The minimum per cent incidence and population per internode were recorded in Co 8001 (20.00% and 0.73), respectively. The maximum incidence and population per internode were found in CoN 08071 (50 % and 7.16), respectively (Table -4).

Incidence of whitefly and pyrilla was not found under natural condition.

Project E.4.1.3 AVT- I P (Early) trial:

Table- 1: Screening of sugarcane varieties against ESB in AVT I P (Early) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent ESB incidence			Total	Grade
		30 DAP	60 DAP	90 DAP		
1	Co 07012	(0.00)	11.43(3.95)	6.35(1.23)	8.89(5.18)	LS
2	Co 07015	(0.00)	12.78(4.90)	9.96(3.02)	11.37(7.92)	LS
3	CoN 07071	(0.00)	11.09(3.71)	7.94(1.96)	9.51(5.67)	LS

4	PI 07131	(0.00)	12.60(4.78)	12.07(4.40)	12.34(9.18)	LS
5	Co 85004	(0.00)	8.57(2.27)	10.13(3.11)	9.35(5.38)	LS
6	Co 94008	(0.00)	13.38(5.37)	7.29(1.62)	10.34(6.99)	LS
7	CoC 671	(0.00)	10.51(3.34)	13.61(5.54)	12.06(8.88)	LS
S.Em. ±(T)			0.35	0.53	1.69	
S.Em. ±(TxY)			-	-	0.45	
C.D @ 5%(T)			1.08	1.64	NS	
C.D @ 5 % (TxY)			-	-	1.31	
C.V. %			5.31	9.58	7.41	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Early shoot borer, *Chilo infuscatellus* (S.):

Four varieties along with three checks were screened for ESB in AVT- I P (Early). The ESB infestation at 60 DAP and 90 DAP was found significant while, in pooled analysis, it was found non significant. At 30 DAP ESB infestation was not found in any genotype. Based on the cumulative total the minimum infestation was found in Co 07012 (5.18%), while the maximum infestation was found in PI 07131 (9.18%) (Table-1).

Table- 2: Screening of sugarcane varieties against top borer in AVT I P (Early) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent top borer incidence			Total	Grade
		5 th month	7 th month	At harvest		
1	Co 07012	9.53(2.82)	10.00(3.06)	8.16(2.02)	9.23(7.9)	LS
2	Co 07015	8.99(2.45)	7.48(1.70)	7.96(1.92)	8.15(6.07)	LS
3	CoN 07071	7.53(1.72)	4.64(0.70)	5.47(0.91)	5.88(3.33)	LS
4	PI 07131	11.27(3.83)	10.43(3.28)	9.86(2.94)	10.52(10.05)	LS
5	Co 85004	9.25(2.61)	5.76(1.01)	5.82(1.03)	6.94(4.65)	LS

6	Co 94008	6.15(1.15)	8.98(2.44)	8.77(2.33)	7.97(5.92)	LS
7	CoC 671	10.99(3.65)	9.99(3.02)	6.24(1.19)	9.08(7.86)	LS
S.Em. ±(T)		0.52	0.48	0.14	0.82	
S.Em. ±(TxY)		-	-	-	0.42	
C.D @ 5%(T)		1.62	1.50	0.45	2.54	
C.D @ 5 % (TxY)		-	-	-	1.30	
C.V. %		10.01	10.37	3.45	8.89	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Top borer, *Scirpophaga excerptalis* (Wlk): Four entries of AVT-I P (Early) along with three checks were screened for top borer. The top borer, *Scirpophaga excerptalis* (Wlk) infestation was at 5th month, 7th month, at harvest and in pooled analysis was found significant. Based on the cumulative total minimum infestation was found in CoN 07071(3.33%), while it was maximum in PI 07131(10.05%) (Table-2).

Table- 3: Screening of different varieties against sugarcane pests Internode borer and Root borer in AVT I Plant (Early)) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Internode borer			Root borer	
		% incidence	% intensity	Grade	% incidence	Grade
1	Co 07012	26.57 (20.00)	9.57 (2.79)	LS	21.56 (20.00)	MS
2	Co 07015	18.44 (10.00)	6.05 (1.12)	LS	16.45 (11.67)	LS
3	CoN 07071	18.44 (10.00)	6.19 (1.16)	LS	19.78 (16.67)	MS
4	PI07131	33.21 (30.00)	15.42 (7.08)	MS	19.78 (16.67)	MS
5	Co 85004	12.43 (6.67)	5.65 (0.97)	LS	19.78 (16.67)	MS
6	Co 94008	26.57 (20.00)	9.75 (2.87)	LS	19.78 (16.67)	MS

7	CoC 671	18.44 (10.00)	5.63 (0.96)	LS	16.45 (11.67)	LS
S.Em. ±(T)		2.27	0.32		1.16	
C.D @ 5%(T)		7.00	0.98		NS	
C.V. %		17.88	6.61		10.53	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Internode borer, *Chilo sacchariphagous indicus* (Kapur): Four varieties of AVT-I P (Early) were screened along with three checks. The per cent internode borer incidence and per cent intensity were found significant. The minimum per cent incidence and per cent intensity were found in Co 85004 (6.67% and 0.97%), respectively while maximum per cent incidence and per cent intensity were found in PI 07131 (30.00% and 7.08%), respectively (Table -3).

Root Borer, *Emmalocera depressella* (Swinhoe): Four varieties of AVT-I P (Early) with three checks were screened. The per cent incidence was found non significant. The minimum per cent incidence was found in Co 07015 and CoC 671 (11.67%), while maximum per cent incidence was found in Co 07012 (20.00%) (Table-3).

Table- 4: Screening of different varieties against sugarcane pests Scale insect and Mealy bugs in AVT I Plant (Early) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Varieties	Mean percent scale insect			Mealy Bugs		
		% incidence	Intensity	Grade	% incidence	Population per internode	Grade
1	Co 07012	(10.00)	(8.33)	LS	32.22(30)	8.89(2.40)	MS
2	Co 07015	(15.00)	(12.76)	MS	45.00(50)	8.90(2.40)	HS
3	CoN 07071	(0.00)	(0.00)	LS	33.00(30)	6.11(1.13)	MS
4	PI07131	(5.00)	(5.44)	LS	33.00(30)	5.90(1.07)	MS

5	Co 85004	(0.00)	(0.00)	LS	45.00(50)	10.66(3.42)	HS
6	Co 94008	(0.00)	(0.00)	LS	42.12(45)	8.29(2.09)	HS
7	CoC 671	(0.00)	(0.00)	LS	33.00(30)	10.12(3.09)	MS
S.Em. ±(T)					3.18	0.29	
C.D @ 5%(T)					9.80	0.91	
C.V. %					14.65	6.08	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Scale insect (*Melanaspis glomerata* (Green)): Four test clones of AVT-I P (Early) along with three checks were screened. The minimum per cent incidence and per cent intensity were recorded in PI 07131 (5.00% and 5.44%), respectively while maximum per cent incidence and per cent intensity were found in Co 07015 (15.00% and 12.76%), respectively (Table -4).

Mealy bugs, *Saccharicoccus sacchari* (Cockerell): Four varieties of AVT-I P (Early) along with three checks were screened. The per cent incidence and population per internode were found significant. The minimum per cent incidence and minimum population per internode were recorded in PI 07131 (30.00% and 1.07) respectively, while maximum incidence and population per internode were found in Co 85004 (50.00 and 3.42), respectively (Table -4). Incidence of whitefly and pyrilla was not found under natural condition.

Project E.4.1.4 AVT- I P (Midlate) trial:

Table-1: Screening of sugarcane varieties against ESB in AVT I P (M) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent ESB incidence			Total	Grade
		30 DAP	60 DAP	90 DAP		
1	Co 07006	(0.00)	9.30(2.67)	8.09(2.02)	8.69(4.69)	LS
2	Co 07007	(0.00)	15.52(7.18)	9.12(2.52)	12.32(9.7)	LS
3	Co 07008	(0.00)	9.17(2.93)	10.77(3.51)	10.24(6.44)	LS
4	Co 7009	(0.00)	15.09(6.81)	8.82(2.41)	11.95(9.22)	LS
5	Co07010	(0.00)	10.89(3.57)	10.26(3.18)	10.57(6.75)	LS
6	CoSnk 07103	(0.00)	11.29(3.90)	10.69(3.45)	10.99(7.35)	LS

7	Co 86032	(0.00)	12.87(5.06)	11.86(4.23)	12.36(9.29)	LS
8	Co 99004	(0.00)	13.57(5.52)	11.35(3.89)	12.46(9.41)	LS
S.Em. ±(T)			0.87	0.37	1.36	
S.Em. ±(TxY)			-	-	0.67	
C.D @ 5%(T)			2.66	1.12	NS	
C.D @ 5 % (TxY)			-	-	2.04	
C.V. %			12.38	6.37	10.43	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Early shoot borer, *Chilo infuscatellus* (S.):

Six varieties along with two checks were screened for ESB in AVT I P (Midlate). The ESB infestation at 60 DAP and 90 DAP were found significant, while in pooled analysis it was found non significant. Based on the cumulative total the minimum infestation was found in Co 07006 (4.69%), while the maximum infestation was found in Co 07007 (9.70%) followed by Co 99004 (9.41%) (Table-1).

Table- 2: Screening of sugarcane varieties against top borer in AVT I P (M) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent top borer incidence			Total	Grade
		5 th month	7 th month	At harvest		
1	Co 07006	9.10(2.55)	7.92(1.90)	5.55(0.94)	7.53(5.39)	LS
2	Co 07007	9.71(2.85)	8.22(2.05)	5.82(1.03)	7.91(5.93)	LS
3	Co 07008	9.69(2.90)	8.24(2.06)	8.04(1.96)	8.66(6.92)	LS
4	Co 7009	8.53(2.20)	6.38(1.25)	8.53(2.20)	7.81(5.65)	LS
5	Co07010	5.97(1.09)	8.65(2.28)	6.20(1.18)	6.94(4.55)	LS
6	CoSnk 07103	11.04(3.73)	8.36(2.13)	6.01(1.10)	8.47(6.96)	LS
7	Co 86032	9.66(2.85)	8.94(2.42)	6.17(1.16)	8.25(6.43)	LS
8	Co 99004	10.07(3.06)	9.59(2.80)	8.12(2.00)	9.26(5.39)	LS

S.Em. \pm(T)	0.66	0.38	0.22	0.70	
S.Em. \pm(TxY)	-	-	-	0.46	
C.D @ 5%(T)	2.01	1.15	0.68	NS	
C.D @ 5 % (TxY)	-	-	-	1.40	
C.V. %	12.50	7.98	5.72	9.87	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Top borer, *Scirpophaga excerptalis* (Wlk):

Six varieties along with two checks were screened in AVT-I P (Midlate) for top borer. The top borer, *Scirpophaga excerptalis* (Wlk) infestation at 5th month, 7th month and at harvest was found significant, while in pooled analysis it was found non significant. Based on the cumulative total of mean infestation the minimum infestation was found in Co 07010 (4.55%) followed by Co 07006 (5.39%), while the maximum infestation was found in CoSnk 07103 (6.96 %) (Table-2). All test varieties and checks of AVT- I P (Midlate) were observed in less susceptible grade.

Table- 3: Screening of different varieties against sugarcane pests Internode borer and Root borer in AVT I Plant (M) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Internode borer			Root borer	
		% incidence	% intensity	Grade	% incidence	Grade
1	Co 07006	28.78 (23.33)	10.38 (3.25)	MS	18.33 (15.00)	LS
2	Co 07007	33.21 (30.00)	10.83 (3.54)	MS	19.78 (16.67)	MS
3	Co 07008	26.57 (20.00)	8.25 (2.06)	LS	21.44 (20.00)	MS
4	Co 7009	33.00 (30.00)	11.35 (3.88)	MS	19.78 (16.67)	MS
5	Co07010	39.23 (40.00)	11.88 (4.27)	MS	16.45 (11.67)	LS
6	CoSnk 07103	28.78 (23.33)	10.25 (3.17)	MS	22.51 (21.67)	MS
7	Co 86032	21.15 (13.33)	8.41 (2.14)	LS	16.45 (11.67)	LS
8	Co 99004	26.57 (20.00)	10.38 (1.38)	LS	16.45 (11.67)	LS
S.Em. \pm(T)		2.03	0.45		1.99	

C.D @ 5%(T)	6.16	1.35		NS	
C.V. %	11.85	5.91		18.12	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Internode borer, *Chilo sacchariphagous indicus* (Kapur): Six varieties were screened along with two checks. The per cent incidence was found non significant and per cent intensity was found significant. The minimum per cent incidence was found in Co 86032 (13.33%) and per cent intensity was found in Co 99004 (1.38 %), while maximum per cent incidence and per cent intensity was found in Co 07010 (40.00% and 4.27 %), respectively (Table -3).

Root Borer, *Emmalocera depressella* (Swinhoe): Six varieties with two checks were screened. The per cent incidence was found non significant. The minimum per cent incidence was found in test clone Co 07010 (11.67%), while maximum per cent incidence was found in CoSnk 07103 (21.67 %) (Table-3).

Table- 4: Screening of different varieties against sugarcane pests Scale insect and Mealy bugs in AVT I Plant (M) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Varieties	Mean percent scale insect			Mealy Bugs		
		% incidence	Intensity	Grade	% incidence	Population per internode	Grade
1	Co 07006	(15.00)	(14.12)	MS	45.00(50)	11.07(3.69)	HS
2	Co 07007	(10.00)	(6.08)	LS	45.00(50)	8.43(2.16)	HS
3	Co 07008	(0.00)	(0.00)	LS	39.15(40)	7.35(1.64)	HS
4	Co 7009	(20.00)	(15.08)	MS	45.00(50)	2.64(0.51)	HS
5	Co07010	(0.00)	(0.00)	LS	0.41(0)	7.39(1.67)	LS
6	CoSnk 07103	(0.00)	(0.00)	LS	45.00(50)	7.42(1.67)	HS
7	Co 86032	(0.00)	(0.00)	LS	45.00(50)	7.42 (1.67)	HS
8	Co 99004	(0.00)	(0.00)	LS	29.22(25)	4.90 (0.73)	MS
S.Em. ±(T)					2.59	0.83	
C.D @ 5%(T)					7.85	2.51	
C.V. %					12.21	20.24	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Scale insect, (*Melanaspis glomerata* (Green)) : Six varieties along with two checks were screened. The minimum per cent incidence and per cent intensity were recorded in Co 07008 (0.00 %), while maximum incidence and per cent intensity were found in Co 07009 (20.00 % and 15.08 %), respectively (Table -4).

Mealy bugs, *Saccharicoccus sacchari* (Cockerell): Six varieties along with two checks were screened. The per cent incidence and population per internode were found significant. The minimum per cent incidence was found in Co 07010 (0.00 %), and population per internode was found in Co 07009 (0.51), while maximum incidence and population per internode was found in Co 07006 (50.00 % and 3.69 %), respectively (Table -4).

Incidence of whitefly and pyrilla was not found under natural condition.

Project E.4.1.5 AVT- II P (Midlate) trial

Table- 1: Screening of sugarcane varieties against ESB in AVT II P (M) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent ESB incidence	Total	Grade
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		30 DAP	60 DAP	90 DAP		
1	Co 06007	(0.00)	11.93(4.30)	10.94(3.64)	11.43(7.94)	LS
2	Co 06010	(0.00)	13.22(5.25)	9.99(3.01)	11.60(8.26)	LS
3	Co 06012	(0.00)	17.37(8.95)	11.90(4.26)	14.64(13.21)	LS
4	Co 06013	(0.00)	8.42(2.15)	10.39(3.26)	9.40(5.41)	LS
5	Co 06014	(0.00)	15.50(7.15)	11.04(3.70)	13.27(10.85)	LS
6	Co 06015	(0.00)	12.27(4.52)	6.83(1.42)	9.55(5.94)	LS
7	Co 06020	(0.00)	12.42(4.64)	8.17(2.05)	10.30(6.69)	LS
8	Co 06027	(0.00)	13.88(5.83)	9.03(2.47)	11.46(8.3)	LS
9	CoM 06082	(0.00)	13.26(5.27)	9.76(2.88)	11.51(8.15)	LS
10	CoM 06084	(0.00)	14.96(6.67)	14.69(6.47)	14.82(13.14)	LS
11	CoSnk 03632	(0.00)	11.05(3.68)	8.45(2.22)	9.75(5.9)	LS
12	Co 86032	(0.00)	12.87(5.06)	11.86(4.23)	12.36(9.29)	LS
13	Co 99004	(0.00)	13.57(5.52)	11.35(3.89)	12.46(9.41)	LS
S.Em. ±(T)			0.53	0.53	1.11	
S.Em. ±(TxY)			-	-	0.53	
C.D @ 5%(T)			1.55	1.55	NS	
C.D @ 5 % (TxY)			-	-	1.51	
C.V. %			7.02	8.92	7.87	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Early shoot borer, *Chilo infuscatellus* (S.): Eleven varieties including two checks were screened for ESB in AVT-II (Midlate). The ESB infestation was found significant at 30 DAP, 60 DAP and 90 DAP. But in pooled analysis, it was found non significant. Based on the cumulative total the minimum infestation was found in Co 06013 (5.41%), while the maximum infestation was found in Co 06012 (13.21%) (Table-1).

Table- 2: Screening of sugarcane varieties against top borer in AVT II P (M) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent top borer incidence			Total	Grade
		5 th month	7 th month	At harvest		
1	Co 06007	11.96(4.30)	9.39(2.67)	6.21(1.18)	9.19(8.15)	LS

2	Co 06010	10.91(3.59)	8.48(2.19)	4.53(0.89)	7.97(6.67)	LS
3	Co 06012	8.28(2.09)	8.38(2.13)	5.82(1.03)	7.49(5.25)	LS
4	Co 06013	10.46(3.35)	8.43(2.15)	5.92(1.07)	8.27(6.57)	LS
5	Co 06014	10.22(3.23)	12.04(4.35)	7.61(1.77)	9.96(9.35)	LS
6	Co 06015	10.24(3.22)	7.77(1.84)	7.58(1.74)	8.53(6.8)	LS
7	Co 06020	9.82(2.96)	9.91(3.03)	5.88(1.05)	8.54(7.04)	LS
8	Co 06027	9.46(2.71)	9.14(2.61)	5.48(0.92)	8.03(6.24)	LS
9	CoM 06082	8.82(2.36)	9.54(2.76)	6.24(1.19)	8.20(6.31)	LS
10	CoM 06084	11.24(3.82)	14.98(6.70)	11.82(4.21)	12.68(14.73)	MS
11	CoSnk 03632	5.57(0.94)	9.05(2.53)	7.78(1.84)	7.46(5.31)	LS
12	Co 86032	10.44(3.29)	8.94(2.42)	6.17(1.16)	8.51(6.87)	LS
13	Co 99004	10.07(3.06)	9.50(2.80)	8.12(2.00)	9.23(7.86)	LS
S.Em. ±(T)		0.62	0.57	0.64	0.80	
S.Em. ±(TxY)		-	-	-	0.61	
C.D @ 5%(T)		1.82	1.68	1.87	2.34	
C.D @ 5 % (TxY)		-	-	-	1.73	
C.V. %		11.02	10.32	16.18	12.12	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Top borer, *Scirpophaga excerptalis* (Wlk): Eleven varieties AVT-II P (Midlate) along with two checks were screened against top borer. The top borer, *Scirpophaga excerptalis* (Wlk) infestation was found significant at 5th month, 7th month, at harvest and in pooled analysis, was found significant. Based on the cumulative total of mean infestation the significantly minimum infestation was found in Co 06012 (5.25%), while significantly the highest infestation was found in CoM 06084 (14.73%) (Table-2). All the test entries were found in less susceptible grade except CoM 06084 which was found in MS grade.

Table-3: Screening of different varieties against sugarcane pests Internode borer and Root borer in AVT II Plant (M) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Internode borer			Root borer	
		% incidence	% intensity	Grade	% incidence	Grade
1	Co 06007	21.15 (13.33)	6.93 (1.48)	LS	18.33 (15.00)	LS
2	Co 06010	26.57 (20.00)	10.95 (3.63)	LS	16.45 (11.67)	LS

3	Co 06012	26.57 (20.00)	11.48 (3.96)	LS	22.70 (21.67)	MS
4	Co 06013	39.15 (40.00)	13.24 (5.27)	MS	21.44 (20.00)	MS
5	Co 06014	33.21 (30.00)	11.60 (4.04)	MS	16.45 (11.67)	LS
6	Co 06015	26.57 (20.00)	8.49 (2.19)	LS	15.00 (10.00)	LS
7	Co 06020	26.57 (20.00)	8.33 (2.10)	LS	16.45 (11.67)	LS
8	Co 06027	21.15 (13.33)	6.60 (1.35)	LS	19.78 (16.67)	MS
9	CoM 06082	21.15 (13.33)	8.57 (2.22)	LS	15.00 (10.00)	LS
10	CoM 06084	18.44 (10.00)	5.94 (1.07)	LS	19.78 (16.67)	MS
11	CoSnk 03632	21.15 (13.33)	6.63 (1.37)	LS	21.44 (20.00)	MS
12	Co 86032	21.15 (13.33)	8.44 (2.17)	LS	16.45 (11.67)	LS
13	Co 99004	21.15 (20.00)	7.62 (1.84)	LS	16.45 (11.67)	LS
S.Em. ±(T)		1.93	0.56		1.57	
C.D @ 5%(T)		5.64	8.62		4.59	
C.V. %		13.20	10.89		15.01	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Internode borer, *Chilo sacchariphagous indicus* (Kapur): Eleven varieties were screened along with two checks. The per cent incidence and per cent intensity were found significant. The minimum per cent incidence and per cent intensity was found in CoM 06084 (10.00 % and 1.07 %), while maximum per cent incidence and per cent intensity was found in Co 06013 (40.00% and 5.27%), respectively (Table -3).

Root Borer, *Emmalocera depressella* (Swinhoe):

Eleven varieties with two checks were screened. The per cent incidence was found significant. The minimum per cent incidence was found in Co 06015 and Com 06082 (10.00%), while maximum per cent incidence was found in Co 06012 (21.67%) (Table-3).

Table- 4: Screening of different varieties against sugarcane pests Scale insect and Mealy bugs in AVT II Plant (M) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Varieties	Mean percent scale insect			Mealy Bugs		
		% incidence	Intensity	Grade	% incidence	Population per internode	Grade
1	Co 06007	(0.00)	(0.00)	LS	45.00(50)	6.68(1.36)	HS

2	Co 06010	(0.00)	(0.00)	LS	42.12(45)	8.64(2.27)	HS
3	Co 06012	(0.00)	(0.00)	LS	39.15(40)	8.78(2.42)	HS
4	Co 06013	(0.00)	(0.00)	LS	10.59(5)	2.20(0.20)	LS
5	Co 06014	(0.00)	(0.00)	LS	10.59(5)	2.02(0.17)	LS
6	Co 06015	(0.00)	(0.00)	LS	39.15(40)	8.82(2.36)	HS
7	Co 06020	(0.00)	(0.00)	LS	39.15(40)	8.79(2.33)	HS
8	Co 06027	(0.00)	(0.00)	LS	42.12(45)	7.46(1.69)	HS
9	CoM 06082	(0.00)	(0.00)	LS	45.00(50)	10.62(3.40)	HS
10	CoM 06084	(0.00)	(0.00)	LS	45.00(50)	14.74(6.49)	HS
11	CoSnk 03632	(0.00)	(0.00)	LS	45.00(50)	12.82(4.93)	HS
12	Co 86032	(0.00)	(0.00)	LS	45.00(50)	7.42(1.67)	HS
13	Co 99004	(0.00)	(0.00)	LS	29.22(25)	4.90(0.73)	MS
S.Em. ±(T)					3.27	0.57	
C.D @ 5%(T)					9.55	1.65	
C.V. %					15.44	12.26	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Scale insect (*Melanaspis glomerata* (Green)): Eleven varieties along with two checks were screened. The per cent incidence and per cent intensity were not recorded in all the variety of experiment under natural condition (Table -4).

Mealy bugs, *Saccharicoccus sacchari* (Cockerell): Eleven varieties along with two checks were screened. The per cent incidence and population per internode were found significant. The minimum per cent incidence and population per internode were recorded in Co 06014 (5.00% and 0.17), while maximum incidence and population per internode were found in CoM 06084 (50.00% and 6.49), respectively (Table -4).

Incidence of whitefly and pyrilla was not found under natural condition

Project E.4.1.6 IVT (Midlate) trial

Table- 1: Screening of sugarcane varieties against ESB in IVT (M) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent ESB incidence			Total	Grade
		30 DAP	60 DAP	90 DAP		
1	Co 08007	(0.00)	8.36(2.15)	9.48(2.72)	8.92 (4.87)	LS
2	Co 08008	(0.00)	8.85(2.42)	9.45(2.71)	9.15 (5.13)	LS
3	Co 08009	(0.00)	13.99(5.87)	11.05(3.69)	12.52 (9.56)	LS
4	Co 08016	(0.00)	13.45(5.42)	9.87(2.94)	11.66 (8.36)	LS

5	Co 08018	(0.00)	12.60(4.78)	11.43(3.97)	12.02 (8.75)	LS
6	Co 08019	(0.00)	8.42(2.18)	6.51(1.29)	7.47 (3.47)	LS
7	Co 08020	(0.00)	11.67(4.09)	9.56(2.76)	10.61 (6.85)	LS
8	CoJn 08091	(0.00)	10.39(3.27)	9.36(2.65)	9.88 (5.92)	LS
9	CoM 08081	(0.00)	8.60(2.27)	11.04(3.70)	9.82 (5.97)	LS
10	CoN 08072	(0.00)	9.26(2.59)	11.38(3.90)	10.32 (6.49)	LS
11	CoVSI 08122	(0.00)	9.53(2.75)	9.00(2.45)	9.26 (5.2)	LS
12	CoSnk 08101	(0.00)	9.57(2.77)	9.18(2.55)	9.38 (5.32)	LS
13	CoVC 08061	(0.00)	10.01(3.04)	11.29(3.86)	10.65 (6.9)	LS
14	CoVC 08062	(0.00)	6.89(1.44)	7.93(1.94)	7.41 (3.38)	LS
15	CoVC 08063	(0.00)	6.45(1.27)	10.88(3.57)	8.67 (4.84)	LS
16	CoVC 08064	(0.00)	14.07(5.98)	11.39(3.92)	12.73 (9.9)	LS
17	CoVSI 08123	(0.00)	9.25(2.63)	10.60(3.42)	9.93 (6.05)	LS
18	Co 86032	(0.00)	12.87(5.06)	11.86(4.23)	12.36 (9.29)	LS
19	Co 99004	(0.00)	13.39(5.85)	11.35(3.89)	12.37 (9.74)	LS
S.Em. ±(T)			0.92	0.40	1.05	
S.Em. ±(TxY)			-	-	0.71	
C.D @ 5%(T)			2.64	1.15	3.12	
C.D @ 5 % (TxY)			-	-	2.04	
C.V. %			15.34	6.86	11.98	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Early shoot borer, *Chilo infuscatellus* (S.): Seventeen varieties including two checks were screened for ESB in IVT (Midlate). The ESB infestations at 60 DAP, 90 DAP and in pooled analysis were found significant. Infestation of ESB was not observed at 30 DAP in clone under testing. Based on the cumulative total of mean infestation the minimum infestation was found in CoVC 08062 (3.38 %), while the maximum infestation was found in CoVC 8064 (9.90 %) (Table-1).

Table- 2: Screening of sugarcane varieties against top borer in IVT (M) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Mean per cent top borer incidence			Total	Grade
		5 th month	7 th month	At harvest		
1	Co 08007	9.03(2.47)	7.51(1.77)	7.26(1.64)	7.93 (5.88)	LS
2	Co 08008	9.90(3.03)	8.44(2.17)	8.07(1.99)	8.81 (7.19)	LS
3	Co 08009	13.44(5.42)	12.92(5.01)	10.22(3.16)	12.20 (13.59)	MS
4	Co 08016	10.71(3.52)	9.21(2.58)	8.98(2.45)	9.63 (8.55)	LS
5	Co 08018	9.10(2.55)	7.44(1.68)	5.58(0.95)	7.37 (5.18)	LS

6	Co 08019	8.34(2.11)	6.41(1.26)	6.21(1.18)	6.99 (4.55)	LS
7	Co 08020	9.88(3.01)	8.28(2.08)	5.87(1.05)	8.01 (6.14)	LS
8	CoJn 08091	10.23(3.20)	8.77(2.33)	8.87(2.38)	9.29 (7.91)	LS
9	CoM 08081	8.04(1.96)	6.51(1.30)	6.35(1.23)	6.96 (4.49)	LS
10	CoN 08072	7.96(1.92)	7.55(1.74)	8.22(2.05)	7.91 (5.71)	LS
11	CoVSI 08122	9.51(2.77)	8.56(2.22)	5.88(1.05)	7.98 (6.04)	LS
12	CoSnk 08101	9.90(3.01)	8.80(2.36)	6.40(1.26)	8.37 (6.63)	LS
13	CoVC 08061	8.12(2.00)	8.87(2.38)	6.01(1.10)	7.67 (5.48)	LS
14	CoVC08062	11.03(3.76)	10.79(3.51)	6.93(1.49)	9.59 (8.76)	LS
15	CoVC 08063	9.23(2.62)	7.54(1.73)	7.96(1.92)	8.25 (6.27)	LS
16	CoVCS 08064	11.10(3.77)	10.90(3.58)	7.58(1.75)	9.86 (9.1)	LS
17	CoVSI 08123	9.49(2.77)	8.81(2.35)	4.97(1.10)	7.76 (6.22)	LS
18	Co 86032	10.21(3.18)	8.94(2.42)	6.17(1.16)	8.44 (6.76)	LS
19	Co 99004	9.97(3.06)	9.59(2.80)	8.12(2.00)	9.23 (7.86)	LS
S.Em. ±(T)		0.82	0.39	0.65	0.40	
S.Em. ±(TxY)		-	-	-	0.64	
C.D @ 5%(T)		2.35	1.12	1.87	1.13	
C.D @ 5 % (TxY)		-	-	-	NS	
C.V. %		14.59	7.76	15.85	13.12	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Top borer, *Scirpophaga excerptalis* (Wlk): Seventeen varieties including two checks were screened for top borer in IVT (Midlate). It was observed that the top borer, *Scirpophaga excerptalis* (Wlk) infestation was found significant at 5th month, while in 7th month, at harvest and in pooled analysis it was found significant. Based on the cumulative total of mean infestation the minimum infestation was found in CoM 08081(4.49%), while the maximum infestation was found in Co 08009 (13.59 %) (Table-2).

Table- 3: Screening of different varieties against sugarcane pests Internode borer and Root borer in IVT (M) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Variety	Internode borer			Root borer	
		% incidence	% intensity	Grade	% incidence	Grade
1	Co 08007	26.57 (20.00)	9.05 (2.48)	LS	16.45 (11.67)	LS
2	Co 08008	12.43 (6.67)	6.39 (1.24)	LS	19.78 (16.67)	MS
3	Co 08009	26.57(20.00)	7.45 (1.71)	LS	22.70 (21.67)	MS
4	Co 08016	26.57 (20.00)	8.28 (2.08)	LS	16.45 (11.67)	LS
5	Co 08018	35.22 (33.33)	13.14 (5.17)	MS	16.45 (11.67)	LS

6	Co 08019	18.44 (10.00)	5.22 (0.83)	LS	18.52 (15.00)	LS
7	Co 08020	28.78 (23.33)	10.41 (3.27)	MS	19.78 (16.67)	MS
8	CoJn 08091	0.40 (0.00)	0.41 (0.00)	LS	24.40 (23.33)	MS
9	CoM 08081	18.44 (10.00)	6.74 (1.39)	LS	16.45 (11.67)	LS
10	CoN 08072	21.15 (13.33)	10.60 (3.40)	LS	16.45 (11.67)	LS
11	CoVSI08122	28.78 (23.33)	10.83 (3.54)	MS	24.31 (25.00)	MS
12	CoSnk 08101	28.78 (23.33)	9.92 (2.97)	MS	16.45 (11.67)	LS
13	CoVC 08061	18.44 (10.00)	6.04 (1.11)	LS	18.52 (15.00)	LS
14	CoVC08062	18.44 (10.00)	7.75 (1.86)	LS	16.45 (11.67)	LS
15	CoVC 08063	21.15 (13.33)	9.15 (2.54)	LS	19.78 (16.67)	MS
16	CoVC 08064	21.15 (13.33)	8.58 (2.23)	LS	16.45 (11.67)	LS
17	CoVSI08123	26.57 (20.00)	10.60 (3.40)	LS	18.52 (15.00)	LS
18	Co 86032	21.15 (13.33)	8.44 (2.17)	LS	16.45 (11.67)	LS
19	Co 99004	26.57 (20.00)	7.82 (1.85)	LS	16.45 (11.67)	LS
S.Em. ±(T)		2.11	0.40		1.35	
C.D @ 5%(T)		6.07	1.15		3.86	
C.V. %		16.36	8.43		12.63	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Internode borer, *Chilo sacchariphagous indicus* (Kapur): Seventeen varieties including two checks were screened for internode borer in IVT (Midlate). The per cent incidence and per cent intensity were found significant. The minimum per cent incidence and per cent intensity were found in CoJn 08091 (0.00 % and 0.00 %), respectively. while maximum per cent incidence and per cent intensity was found in Co 08018 (33.33 % and 5.17 %), respectively (Table -3).

Root Borer, *Emmalocera depressella* (Swinhoe): Seventeen varieties along with two checks were screened. The per cent incidence was found significant. The minimum per cent incidence of 11.67% was found in 10 clones viz. Co 08007, Co 08016, Co 08018, CoM 08081, CoN 08072, CoSnk 08101, CoVC08062, CoVC 08064, Co 86032 and Co 99004, while maximum per cent incidence was found in CoVSI 08122 (25 %) (Table-3).

Table- 4: Screening of different varieties against sugarcane pests Scale insect and Mealy bugs in IVT (Midlate) trial at Regional Sugarcane Research Station, Navsari (2011-12).

Sr.No.	Varieties	Mean percent scale insect			Mealy Bugs		
		% incidence	Intensity	Grade	% incidence	Population per internode	Grade
1	Co 08007	(0.00)	(0.00)	LS	29.93(25)	6.11(1.13)	MS
2	Co 08008	(0.00)	(0.00)	LS	0.41(0)	0.41(0.00)	LS
3	Co 08009	(0.00)	(0.00)	LS	26.57(20)	4.23(0.56)	MS
4	Co 08016	(0.00)	(0.00)	LS	45.00(50)	9.90(2.96)	HS
5	Co 08018	(5.00)	(3.30)	LS	39.15(40)	7.83(1.87)	HS
6	Co 08019	(0.00)	(0.00)	LS	42.12(45)	8.17(2.02)	HS
7	Co 08020	(0.00)	(0.00)	LS	0.41(0)	0.41(0.00)	LS
8	CoJn 08091	(0.00)	(0.00)	LS	42.12(45)	11.22(3.80)	HS

9	CoM 08081	(5.00)	(6.15)	LS	45.00(50)	13.38(5.36)	HS
10	CoN 08072	(10.00)	(4.83)	LS	45.00(50)	11.14(3.73)	HS
11	CoVSI 08122	(0.00)	(0.00)	LS	45.00(50)	10.73(3.47)	HS
12	CoSnk 08101	(5.00)	(3.46)	LS	45.00(50)	11.71(4.13)	HS
13	CoVc 08061	(5.00)	(2.72)	LS	45.00(50)	9.40(2.69)	HS
14	CoVc 08062	(5.00)	(1.86)	LS	25.14(25)	10.00(3.02)	MS
15	CoVc 08063	(0.00)	(0.00)	LS	45.00(50)	9.40(2.69)	HS
16	CoVc 08064	(0.00)	(0.00)	LS	45.00(50)	11.52(4.00)	HS
17	CoVSI 08123	(0.00)	(0.00)	LS	45.00(50)	13.01(5.07)	HS
18	Co 86032	(0.00)	(0.00)	LS	45.00(50)	7.42(1.67)	HS
19	Co 99004	(0.00)	(0.00)	LS	29.22(25)	4.90(0.73)	MS
S.Em. ±(T)					3.48	0.35	
C.D @ 5%(T)					9.99	1.00	
C.V. %					16.74	7.16	

Note: Figures in parentheses are original values and those outside are arcsine transformed values

Scale insect (*Melanaspis glomerata* (Green)): Seventeen genotypes along with two checks were screened. The minimum per cent incidence and per cent intensity was recorded in CoVC 08062 (5.00 % and 1.86 %), while maximum incidence found in CoN 08072 (10.00 %) while maximum per cent intensity was found in CoM 08081 (6.15 %) (Table-4).

Mealy bugs, *Saccharicoccus sacchari* (Cockerell): Seventeen varieties along with two checks were screened. The per cent incidence and population per internode was found significant. The minimum per cent incidence and population per internode were recorded in Co 08008 and Co 08020 (0.00 %), while maximum incidence found was found in CoM 08081 (50 %) and population per internode was found (5.36) (Table -4).

Incidence of whitefly and pyrilla was not found under natural condition.

Project E.28:

Title	:	Survey and surveillance of Sugarcane insect pests.
Objectives	:	To identify key insect pests of Sugarcane in the area.
Duration	:	Long term.
Year of start	:	2011-2012
Location	:	Regional Sugarcane Research Station N.A.U, Navsari and South Gujarat area.
Methodology	:	Roving Survey was carried out of sugarcane fields. Observations on incidence of sugarcane borer pests and

sucking pests were recorded.

Table 1: Survey and surveillance of insect pests of sugarcane in South Gujarat during 2011-12.

Name of pest	Varieties	Location	Per cent Incidence
Top borer	CoN 05071 Co 86032	Sarai (Dhaman)Ta. Navsari Di: Navsari (Gandevi Sugar)	7-8%
Root borer	Co 86002, Co86032	Sayan, Pandvai and Ganesh sugar factory areas	2-3 %
White fly	Co 86032	Palej (Bharuch) Gandhara Sugarfactory, Talala, TalalaSugar factory, Arasan (Nalod) Ta: Jalalpore Di: Navsari (Maroli sugar factory)	6-8%
Yellow mite	Co 97009	Vada Ta: Navsari (Gandevi Sugar)	3-5%
Scale insect	Co 86032, CoN 05071	Velanpur, Zervavra Ta: Mahuva Di: Surat (Gandevi: Sugar)	4-6%
Mealy bugs	Co 86032	Vagheswar, Ghadoi Ta: Mahuva Di: Surat Gandevi: Sugar factory.	10-12%
Rodents	Co 86032	Mohini Ta: Palsana Di: Surat (Chalthan Sugar)	8-10%

Note: pyrilla was found in trace in above villages.

Project No. 30

Title	: Monitoring of insect pests and bio-agents in sugarcane agro-ecosystem.
Objective	: To monitor the key insect pests and natural enemies in the area.
Locations	: R.S.R.S., N.A.U., Navsari
Year of start	: 2011-12
Duration	: Long term
Date of Planting	: 19-02-2011
Variety	: Co 86032
Methodology	: 1. Planting of sugarcane variety recommended for the region in 0.2 ha area.

	: 2. All recommended practices was followed except application of insecticide
Observations were recorded	: 1. Observations on incidence of borers were recorded by examining 20 canes at five places (four corners and in the middle), sucking pests by examining 25 canes.
	2. Observations for all the bio-agents were recorded.

Monitoring of insect pests and bio-agents in sugarcane

Name of the pest	Mean per cent incidence	Larva/egg mass collected	Parasitised larva	Bio-agents observed	Per cent parasitism
<i>ESB Sesamia sp.</i>	9-10%	51(L)	2	<i>Technidae</i>	3.92%
<i>Chilo sp.</i>		113(L)	3	<i>Apantelis sp.</i>	2.65%
Top borer	6-7%	47(E)	3	<i>Telonomus sp.</i>	6.38%
Internode borer	13-14	-	-	-	-
Root borer	11-12	-	-	-	-
Scale insect	3-4%	-	-	-	-
Mealy bugs	25-27%	-	-	<i>Chrysoperla carnea</i>	-
Pyrilla	Very low	15(E) 20(N+Adult)	4 5	<i>Tetrastacus pyrillae</i> <i>Epericania melanoleuca</i>	26.66% 25.00%
White fly	Very low	-	-	Lady bird beetle	-

Project No. E.31:

1. **Title** : Management of whitefly (*Aleurolobus barodensis*) in sugarcane agro-ecosystem.
2. **Objective** : To find out effective strategy for the management of sugarcane whitefly and to compare the effectiveness of individual technology evaluated for the control of whitefly.
3. **Year of start** : 2011-2012
4. **Variety** : CO 99004
5. **Location** : Regional Sugarcane Research Station, N.A.U., Navsari.

- 6. Dt. Of planting** : 19-02-2011
- 7. Treatments** : 1. Destruction of puparia by removing infested leaves
2. Removal of infested leaves + Installation of cages @ 15/ha.
3. Removal of infested leaves + Application of imidacloprid 0.005 % along with 2 % urea.
4. Removal of infested leaves + Application of neem based pesticide azadirachtin 4 g a.i/ha i.e. 0.0004 %
5. Control
- 8. Design** : Large plot, field trial
- 9. Replication** : Four random observations
- 10. Plot size** : 20 m x 20 m
- 11. Methodology** : Each treatment as above was allocated to individual large plot/field. Four spots in each treatment was randomly selected and marked. Three rows each of three meter length was taken per spot and observation on incidence of whitefly (nymph and puparia) were recorded before treatment and 7, 15, 21 and 30 days after treatments. Total number of nymphs and puparia were recorded per 5 x 2 cm (10 sq. cm) from 20 leaves from proximal, middle and distal regions of the leaves. The average per sq. cm was calculated and reported.
- 12 Results** : There was no whitefly infestation in sugarcane agro-ecosystem. So no need to apply treatments and hence the experimental results could not be obtained.

Project No. E. 32

- Project Title** : Population dynamics of sugarcane borers (Early shoot borer, top borer, and internode borer) through pheromone trap
- Objective** : To study the population dynamics of sugarcane borers (Early shoot borer, top borer, and internode borer) through pheromone trap and influence of weather parameters on moth catches.
- Year of start** : 2011-2012
- Variety** : Co 86032
- Location** : RSRS, NAU, Navsari

- Date of planting** : 23-03-2011
- Treatments** : Pheromone lures of sugarcane early shoot borer, top borer, and internode borer
- Plot size** : 1 acre
- Methodology** : The test insect-pests were early shoot borer, top borer, and internode borer. Three pheromone traps for each pest were installed after 20 days of planting till harvest of crop in one acre of sugarcane crop. The pheromone lure was changed after 2 months.
- Observation to be recorded** : 1. Observation on number of moths trapped will be recorded at Weekly interval.
2. The mean number of moth capture will be worked out.
3. The correlation and regression of moth captures will be worked out with weekly meteorological parameters.

Results: Top borer:

Maximum catches of top borer (1.33) was recorded in 2011-12 of 9th, 11th, 22nd, 28th and 39th (28-3 May) met. week. From the Table-1 it is observed that there is negative correlation between top borer moth catches and maximum temperature (-0.01), while minimum temperature(0.07), rainfall (0.15), number of rainy days (0.05), sunshine hours (0.003), morning (0.01) relative humidity and evening (0.02) relative humidity showed positive correlation but were non significant (Table-1).

Early shoot borer:

Maximum catches of Early shoot borer (2.00) was recorded in 2011-12 of 13th (26 feb-01 March) met. week. From the Table-1 it is observed that there is negative correlation between early shoot borer moth catches with minimum temperature (-0.14) and relative humidity evening (-0.24), while relative humidity morning (-0.27), rainfall (-0.35) and number of rainy days (-0.42) showed significantly negative correlation. Whereas, It showed significant positive correlation with sunshine hours (0.43). Maximum temperature (0.19) showed positive correlation with early shoot borer incidence but was non significant (Table-1).

Internode borer:

Maximum catches of Internode borer (1.33) was recorded in 2011-12 of 24th, 28th, 35th 39th (11-17 June, 9-15 July, and 24-30 Sept.) met week. From the Table-1 it is observed that there is

negative correlation between internode borer moth catches with maximum temperature (-0.17) and sunshine hours (-0.16). While, significant positive correlation with rain fall (0.36). Minimum temperature (0.09), number of rainy days (0.20), morning (0.23) and evening (0.15) relative humidity showed positive correlation with internode borer incidence but was non significant (Table-1).

Table: 1 Correlation of moth catches with weather parameters (2011-2012)

Sr. No.	Pests	Temperature		Rain fall	No. of rainy days	Sunshine hours	Relative humidity	
		Maximum	Minimum				Morning	Evening
1.	Top borer	- 0.01359	0.07254	0.15259	0.04717	0.00333	0.01206	0.02058
2.	Early Shoot Borer	0.19410	- 0.13995	- 0.35376*	- 0.42188*	0.43725*	- 0.27667*	- 0.24182
3.	Internode Borer	- 0.17396	0.09137	0.36268*	0.19891	-0.16490	0.23463	0.15316

Project No. E. 33

Project Title : **Bio-efficacy of insecticides against mealy bugs, *Saccharicoccus sacchari* in sugarcane.**

Objective : To evaluate efficacy of insecticide against mealy bugs in sugarcane.

Year of start : 2011-12

Variety : Co 86032

Location : RSRS, NAU, Navsari

Date of planting : 23-02-2011

Design : RBD.

Replications : Three.

No. of treatments : Nine.

T1: Sett treatment of Imidacloprid 70 WG/SP 25 g a.i./ ha+
spraying of Imidacloprid 17.8SL 0.005 %.

T2: Sett treatment of Imidacloprid 70 WG/SP 25 g a.i./ ha+
spraying of Thiamethoxam 25 WG 0.004 %.

T3: Sett treatment of Imidacloprid 70 WG/SP 25 g a.i./ ha+
spraying of Clothianidin 50 WSG 0.004 %.

T4: Sett treatment of Imidacloprid 70 WG/SP 25 g a.i./ ha+
spraying of Acetamiprid 20 SP 0.004 %.

T5: Sett treatment of Thiamethoxam 70 WG/SP 10 g a.i./ ha+
spraying of Imidacloprid 17.8SL 0.005 %.

T6: Sett treatment of Thiamethoxam 70 WG/SP 10 g a.i./ ha+
spraying of Thiamethoxam 25 WG 0.004 %.

T7: Sett treatment of Thiamethoxam 70 WG/SP 10 g a.i./ ha+
spraying of Clothianidin 50 WSG 0.004 %.

T8: Sett treatment of Thiamethoxam 70 WG/SP 10 g a.i./ ha+
spraying of Acetamiprid 20 SP 0.004 %.

T9: Untreated control.

Plot size : 6.0 m x 5.4 m.

Method of application: Dose of a.i. is based on 35000 three eye bud setts. Spraying will be done at the time of cane formation (Approximately 4-5 months after (planting.)

Observations recorded: Germination percentage at 30 and 45 DAP. Randomly selected 10 canes from 3 meter row length and count number of infested internodes out of total number of internodes.

1. before spraying and 7, 15 and 30 DAS and at harvest.
2. Yield (t/ha) and quality parameters at harvest will be recorded.

Results:

There was no significant variation among different treatments in the pre-spraying mealy bugs infestation. The mealy bugs infestation *Saccharicoccus sacchari* (COCK) was found significant at 7 days, 15 days, 30 days, at harvest and pooled analysis. **After 7 days** of spraying the lowest (21.16%) mean per cent intensity of mealy bugs was found in T1 and it was at par with T5(22.81%),T3(23.73%), T4(25.49%),T7 (24.14%).The maximum per cent intensity was found in untreated control (31.95%).

After 15 days the lowest per cent intensity was recorded in treatment T1 (18.93%) and it was at par with the treatment T5 (19.24%),T3(20.89%), T7 (21.68%) and T4 (22.73%).Maximum intensity was found in the untreated control (31.56%)treatment.

After 30 days the treatment T1 (17.04%) was found significantly superior over control (31.71%) and it was at par with T3 (19.51%), T7 (19.52%), T5 (19.82%) and T4 (20.22%) treatments.

At harvest the maximum per cent intensity was found in untreated control (32.31%)while significant lowest intensity was found in treatment T1(23.15%) and it was at par with T5(24.24%) and T3 (19.51%) treatments.

Based on the pooled analysis treatment T1 (20.07%) was found most effective in reducing the mealy bugs per cent intensity and it was at par with the T5 (21.53%) treatment. The control treatment was recorded highest mealy bugs per cent intensity (31.88%). Interaction between Treatment x Period was found non significant (Table:1)

Yield and Quality parameters viz., Brix %, Sucrose %, Purity %, C.C.S %

The highest millable cane yield of sugarcane was recorded in T1 (95.26 t/ha) treatment and it was at par with T5 (93.33 t/ha) and T3 (91.09 t/ha) treatment. The significant lowest yield was found in untreated control (76.91 t/ha) treatment.

The highest Brix per cent was found in treatment T1 (20.50%) and it was at par with all the treatments including control treatment also. Sucrose per cent was found significantly superior over control treatment (17.96%). The maximum sucrose per cent was found in the treatment T1 (18.91%) and it was at par with all the treatments except T6 (18.15%) and T9 (17.96%) treatment. Purity per cent was found significant. The highest purity per cent was recorded in T1 (92.24%) and it was at par with T3 and T5 (92.01%), T7 (91.69%) and T2 (90.85%) treatments. The C.C.S per cent was found significant. The maximum C.C.S per cent was found in the treatment T1 (13.34%) and it was at par with T5 (13.26%), T3 (13.19%), T7 (13.08%), T4 (12.98%) and T8 (12.88%) treatments. The minimum C.C.S per cent was found in untreated control treatment (12.54%) (Table:2)

Table: 1 Bio-efficacy of insecticides against mealy bugs, *Saccharicoccus sacchari* in sugarcane, trial at Regional Sugarcane Research Station, Navsari (2011-12)

Treatment	Mean per cent intensity at					Pooled
	Pre-treat	7DAS	15 DAS	30 DAS	At harvest	
T1	29.50(24.32)	27.31(21.16)	25.73(18.93)	24.27(17.04)	28.70(23.15)	26.54(20.07)
T2	32.18(28.44)	31.63(27.55)	30.14(25.24)	28.15(22.30)	33.34(30.26)	30.81(26.34)
T3	30.49(25.81)	29.10(23.73)	27.15(20.89)	26.17(19.51)	30.24(25.41)	28.16(22.39)
T4	31.68(27.66)	30.30(25.49)	28.38(22.73)	26.68(20.22)	31.62(27.57)	29.24(24.00)
T5	30.09(25.21)	28.45(22.81)	25.95(19.24)	26.38(19.82)	29.46(24.24)	27.56(21.53)
T6	33.26(30.12)	31.90(27.99)	30.91(26.43)	28.95(23.47)	33.73(30.88)	31.38(27.19)
T7	30.68(26.10)	29.38(24.14)	27.71(21.68)	26.17(19.52)	31.13(26.80)	28.60(23.04)
T8	31.82(27.88)	30.56(25.91)	28.75(23.25)	27.33(21.16)	32.20(28.45)	29.71(24.69)
T9	33.98(31.29)	34.38(31.95)	34.16(31.56)	34.25(31.71)	34.61(32.31)	34.35(31.88)
S.Em. ±(T)	1.36	1.28	1.30	1.19	1.19	0.56
S.Em. ±(TxP)	-	-	-	-	-	1.24
C.D @ 5 % (T)	NS	3.83	3.92	3.57	3.58	1.58
C.D @ 5 % (TxP)	-	-	-	-	-	NS
C.V. %	7.50	7.31	7.88	7.48	6.54	7.29

Table: 2 Yield and Quality Parameters

Treatment	Yield (t/ ha)	Quality parameters			
		Brix %	Sucrose %	Purity %	C.C.S %
T1	95.26	20.50	18.91	92.24	13.34
T2	84.05	20.05	18.22	90.85	12.77
T3	91.09	20.34	18.71	92.01	13.19
T4	89.07	20.23	18.47	91.32	12.98
T5	93.33	20.44	18.81	92.01	13.26
T6	81.62	20.00	18.15	90.73	12.71
T7	89.22	20.28	18.59	91.69	13.08
T8	88.44	20.15	18.35	91.10	12.88
T9	76.91	19.92	17.96	90.17	12.54
S.Em. ±(T)	2.77	0.28	0.26	0.23	0.18
C.D @ 5% (T)	4.60	0.831	0.748	0.660	0.527
C.V. %	5.46	2.44	2.40	0.43	2.41

.....X.....X.....X.....X.....X.....